Sigesbeckia fugax and *Tetramolopium vagans*, new Asteraceae from Queensland

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Summary

Pedley, L. (1993). *Sigesbeckia fugax* and *Tetramolopium vagans*, new Asteraceae from Queensland. *Austrobaileya* 4(1): 87–92. *Sigesbeckia fugax* (Heliantheae) and *Tetramolopium vagans* (Astereae) are described as new. The former is related to the two other species of *S.* sect. *Sigesbeckia* occurring in Australia. The latter represents the first record of the genus for Australia and belongs, with species from New Guinea, to *T.* sect. *Alpinum* Lowrey.

Keywords: Asteraceae – Queensland, *Sigesbeckia fugax*, *Tetramolopium vagans*.

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Sigesbeckia L.

Sigesbeckia fugax Pedley, **sp. nov.** affinis *S. orientali* L. et *S. australiensi* D. Schulz; a hac phyllariis exterioribus 10–13 mm longis, longioribus quam phyllariis interioribus, phyllariis interioribus glandulis stipitatis validis fuscis ornatis, capitulis flosculorum plurium, floribus radii discique majoribus differt; ab illa foliis sessilibus (vel petiolis ad basem alatis), phyllariis exterioribus eglandulosis, glandulis phyllariorum interiorium fuscis majoribus, plerumque capitulis flosculorum plurium majorum differt; ab ambobus foliis majoribus magis profunde lobatis sigillatim discoloribus differt. **Typus:** MARANOA DISTRICT: 10 km W of Roma, 25°35'S, 148°41'E, 2 December 1989, *Pedley* 5499 (holo: BRI; iso: BRI, AD, CANB, K, LZ, MEL, MO, NSW, PR, US distribuendi).

Erect annual to 0.5 m high with dark green foliage and dark stems; multicellular hairs on stems. Leaves discolorous, narrowly ovate in outline, deeply coarsely irregularly obtusely lobed, 70–110 mm long, 20–40 mm wide, attenuate from the lowest lobe 15–40 mm to the base (or alternatively, attenuate into a winged petiole 15–40 mm long); some multicellular hairs on upper surface, multicellular hairs on veins and sessile glands elsewhere on lower surface. Fruiting peduncles up to 50 mm long, with moderately dense multicellular hairs and sessile glands. Capitula c. 1 cm diameter; outer phyllaries 5, narrowly spathulate, 10–13 mm long, sparsely pilose on both surfaces, eglandular; inner fertile phyllaries 10–12, c. 5 mm long, navicular with prominent dark stalked glands on back, particularly on keel; paleae about as long as inner phyllaries, more membranous, pubescent, eglandular. Receptacle convex, c. 2 mm diameter, 1 mm high. Ray florets with trifid ligule, 1.7 mm long, 2 mm wide, the tube 1.5 mm long, some small stalked glands on tube and scattered on back of ligule; disc florets c. 20, 2.4 mm long, the limb about as long as the tube, with 5 short teeth, some small stalked glands on tube; anthers yellow, c. 1 mm long. Cypselas of both disc and ray florets black, curved, 3 mm long, square in cross-section, 1.2 mm wide. **Fig. 1.**

Other specimens examined **(all BRI): Queensland.** LEICHHARDT DISTRICT: Capella, 23°05'S, 148°01'E, May 1987, *Broom* 86; 3.5 miles [5.6 km] N of Nanya Siding [25 km WNW of Capella], Dec 1957, *Bisset* E 144. MARANOA DISTRICT: 'Alvalea', 30 km W of Roma, Jul 1983 *Cavayo* s.n. [AQ 339620]; 7 miles [11 km] W of Roma, Oct 1948, *Everist* 3517; 'Bongo', c. 42 miles [67 km] W of Roma, May 1948, *Everist* 3740.

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Habitat: *S. fugax* has been recorded only from dark, fine-textured soils. Though a plant of disturbed situations (roadsides, fallow land) it appears to be native. It is an uncommon plant that is found only sporadically. Roadsides west of Roma, where it had been collected previously, were examined without success a number of times over several years prior to 1989 when a population of vigorous plants was found. Since the species has been collected in the period May to December, it is possible that seeds remain viable in the soil for a consideraable time and that they germinate in response to late summer and winter rains.

Notes: Schulz (1987, 1990) recognised 12 species of *Sigesbeckia* in three sections, the three species comprising sect. *Sigesbeckia* confined to the Old World, the rest to the New World. Two of the Old World species, *S. orientalis* L. and *S. australiensis* D. Schulz, occur in Australia. *S. fugax*, which has affinities with both these species, clearly must also be referred to sect. *Sigesbeckia*. The world-wide distribution of *Sigesbeckia* is unusual since all the closely related genera of subtribe Melampodiinae, except for *Micractis* DC., are restricted to the New World (Steussy 1977).

S. orientalis is restricted to the Old World, including Africa, as a native plant, but has been introduced to a limited extent into the United States and South America (McVaughan & Anderson 1972). It is widespread in eastern Australia, though it may have been introduced after European settlement. The oldest specimen seen by Schulz (1987) was collected at Botany Bay in 1790. Had it been present 20 years earlier it is likely to have been collected along the east coast by Banks and Solander. Bentham (1867) did not cite any collection of Banks and Solander.

Schulz (1987), in describing *S. australiensis*, gave details of its collection localities in Great Britain, Switzerland and Germany where it occurs as a wool alien but, except for the type locality in the northern Flinders Range and for a Leichhardt specimen, not for Australia. It occurs mainly in inland parts of eastern Australia – southern Northern Territory, South Australia, Victoria, New South Wales and once collected in Queensland (see below). Burbidge and Gray (1970), Cunningham *et al.* (1981) and Cooke (1986), all of whom misapplied the name *S. microcephala* DC. to it, should be consulted for details. Leichhardt's collecting locality Bengalla is in the Hunter Valley, New South Wales, not in Queensland (see Blake 1955). At BRI, however, there is a specimen which was seen by Schulz, collected at Glen Aplin near Stanthorpe in November 1946 (*Everist & Webb* 1365). Schulz's observation that *S. australiensis* and *S. orientalis* occur together in Australia is based on one sheet at MEL and is open to question. A small piece of *S. australiensis* is mounted with a specimen of *S. orientalis*; this mixture could well have occurred when the material was mounted rather than when collected.

The relationships of *S. fugax* are with *S. australiensis* and *S. orientalis*, but the species is readily distinguished from both on account of its long, deeply lobed leaves. The proportionate length of inner and outer phyllaries and the occurrence of stipitate glands on them afford other distinguishing characters.

Key to Australian species of *Sigesbeckia*

1. Outer phyllaries about as long as inner; inner phyllaries without stalked glands; leaves shallowly and irregularly serrate, not deeply lobed ..... **S. australiensis**
   Outer phyllaries markedly longer than the inner; inner phyllaries bearing stalked glands; leaves coarsely serrate or deeply lobed 2

2. Leaves deeply lobed, discolorous; outer phyllaries without glands, inner with stout dark glands ..... **S. fugax**
   Leaves coarsely serrate or slightly lobed, ± concolorous; outer and inner phyllaries with rather small yellowish glands ..... **S. orientalis**

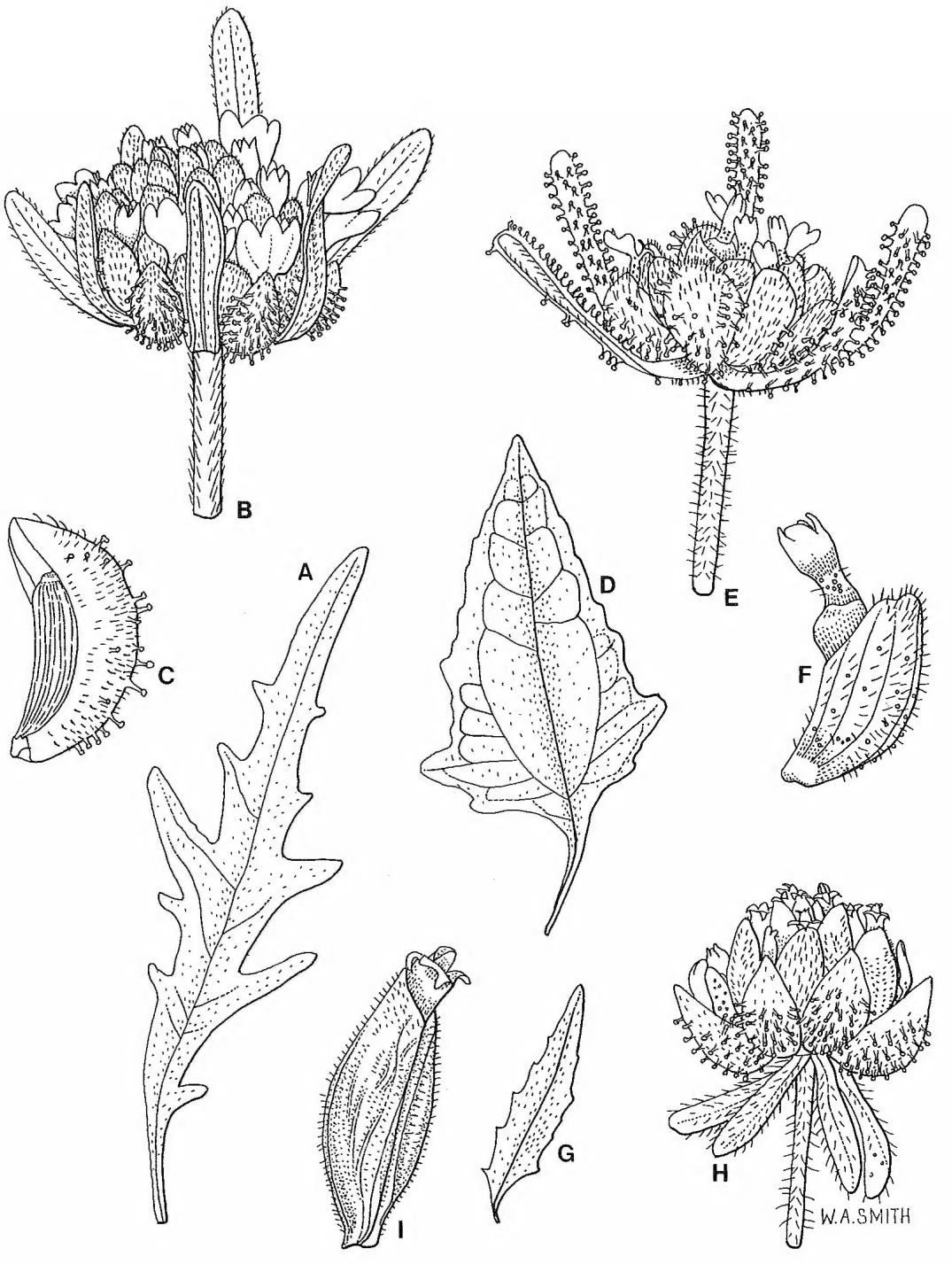

Fig 1. A–C. *Sigesbeckia fugax*: A. leaf × 1. B. inflorescence × 4. C. inner phyllary (enclosing fruit) showing stout glands × 8. D–F. *S. orientalis*: D. leaf × 1. E. inflorescence × 4. F. inner phyllary (clasping flower) showing small glands × 8. G–I. *S. australiensis*: G. leaf × 1. H. inflorescence × 4. I. inner phyllary (clasping flower) showing hairs but no glands × 8. A–C, Pedley 5499; D–F, Gibson 1068; G, Perry 5505; H,I Gittins 2088.

Etymology: The epithet, Latin *fugax*: evasive, elusive, is a reference to the infrequent and erratic appearance and collection of the plant.

Tetramolopium Nees

Tetramolopium vagans Pedley, **sp. nov.** affinis *T. bicolori* Koster a quo foliis grandioribus, bracteis paucioribus angustioribus, capitulis pluribus flosculis phyllarisque ornatis, ligula flosculorum marginalium grandiore tubo plus quam duplo longiore, flosculis disci grandioribus non abrupte in dimidio inferiore contractis, antheris grandioribus et indumento cypselarum densiore differt; arcte minus affinis *T. klossii* (S. Moore) Mattf. a quo foliis semper eglandularibus angustioribus, capitulis minus late expansis, phyllariis flosculisque parvioribus quamquam ligulis flosculorum marginalium specierum duarum ± a equalibus et indumento cypselarum densiore differt. **Typus:** Mt Ernest, 28°19'S, 152°42'E, open heathland on rhyolite outcrops, 14 September 1990, *P.I. Forster, G. Leiper & L. Bird* PIF 7399 (holo: BRI).

Low sprawling subshrub with branches to 30 cm long; branchlets glabrous, purplish, rough with persistent sheaths of shed leaves. Leaves thick, linear, acute 10–15 mm long, c. 0.7 mm wide, 1-nerved, the nerve grooved above, prominent beneath, green, sheathed (the sheath often purplish), glabrous, rarely minute multicellular hairs on the margins; sheath 1-nerved. Heads terminal, solitary, with mauve ray florets, yellow disc-florets, campanulate c. 12 mm wide. Peduncles brown, glabrous, to c. 20 mm long. Bracts 2–5, glabrous, subulate, c. 2 mm long. Phyllaries c. 40 in 3 or 4 series, 3–6.5 mm long, c. 0.6 mm wide, acute, 1-nerved, purplish at tip. Ray florets 25–30, pistillate corolla glabrous except for few random glandular hairs; tube 2.8–3 mm long, ligule linear narrowed to an obscurely 3-toothed tip, 8–9 mm long, c. 1.5 mm wide; style glabrous, branches c. 0.8 mm long. Cypselae antrorsely pilose, ± cylindric, though somewhat flattened, ribs (if any) obscured by hairs, 1.5–2 mm long; pappus bristles 1-seriate, white tinged purple towards tip, 4–5 mm long, somewhat unequal. Disc florets c. 30, narrowly funnel-shaped, a few minute hairs about the middle, 5–5.5 mm long, lobes narrowly triangular c. 0.5 mm long; stamens and style slightly longer than the corolla tube; anthers c. 1.5 mm long; appendage oblong, acute, base of cells obtuse; style branches c. 1.5 mm long. Cypselae and pappus similar to those of marginal flowers, but cypselae empty (sterile). **Fig. 2.**

Other specimens **(all BRI): Queensland.** MORETON DISTRICT: Mt Maroon, Jun 1977, *Hockings* [AQ228605]; ditto, Jun 1988, *Leiper* [AQ439134]; eastern side of Mt Ernest c. 160 m from summit, 28°19'S, 152°43'E, Sep 1989, *Leiper* [AQ458084].

Distribution and habitat: *T. vagans* is known only from Mt Maroon and Mt Ernest in south-eastern Queensland, where it occurs in rock crevices and on rock outcrops. It might be expected to occur on other rhyolitic peaks such as nearby Mt Lindesay. A fragmentary specimen of another species has been collected in northern Queensland (Mt Bowen, Hinchinbrook I, alt 1 200 m, 18°21'S 146°16'E, 20 July 1988, *D.G. Fell & M.R. Swain* DF 1224). It has longer leaves, wider phyllaries and white rays, and cannot be referred to any of the New Guinea species.

The distribution of *Tetramolopium* is intriguing. Smith (1977) postulated that the genus arose as a neo-endemic in New Guinea, a descendant of late Tertiary migrants from Australia, and was later dispersed to the Hawaiian Islands. The occurrence of *T. vagans*, and probably a second species, in Australia raises further questions. Were the Australian species derived, independently of the New Guinea species, from the same ancestral stock as the New Guinea species? Or, did *Tetra-molopium* arise in New Guinea as Smith postulated, and is the genus a recent arrival in Australia? If it spread from New Guinea to Hawaii, then dispersal of 1 000 km to Hinchinbrook Is., and a farther 1 300 km to south-eastern Queensland is feasible. Species of sect. *Alpinum* are plants of high elevation (more than 2 000 m) in New Guinea and Hawaii, and it is difficult to theorise how plants of such ancestry could become established at rather low elevations (1 000 m) in the tropics and subtropics.

Fig. 2. *Tetramolopium vagans*: A. flowering stem × 2. B. disc floret × 8. C. ray floret × 8. D. ligule showing 3-toothed tip × 8. From Leiper sn. (AQ 458084).

***Notes*:** *Tetramolopium* is a genus with 36 described species, 25 in New Guinea (van Royen 1983) and 11 in Hawaii (Lowrey 1986). One of the Hawaiian species, *T. sylvae* Lowrey, has also been recorded from the Cook Islands (Sykes *in* Lowrey, *op. cit.*). Descriptions of the genus have been given by Koster (1966), van Royen (1983) and Lowrey (*op. cit.*). It is closely related to *Vittadinia* but differs, most obviously, in its very short internodes which result in the leaves becoming very congested on distal parts of shoots, and the tubular or infundibular disc florets. Burbidge (1982) did not discuss the relationship between *Vittadinia* and *Tetramolopium* because the latter had not been recorded from Australia. Mattfield (1929), however, in referring some New Guinea species described in *Erigeron* and *Vittadinia* to *Tetramolopium*, discussed the two genera at some length. Lowrey (*op. cit.*) did not discuss generic relationships in detail, but considered species from Hawaii and New Guinea to be congeneric. He established *Tetramolopium* sect. *Alpinum* for all species from New Guinea and

the one alpine Hawaiian species, *T. humile* (A. Gray) Hilleb. He also stated 'the lack of sterility among all Hawaiian taxa and the lack of wide morphological discontinuities among sections establish Hawaiian *Tetramolopium* as a natural assemblage'. Despite this statement, *Tetramolopium* sect. *Alpinum* is morphologically and ecologically rather different from the other sections and may yet be regarded as a distinct genus within the Astereae. It may be significant that Bentham (1873) in recognising *Tetramolopium*, did not include *T. humile*.

Tetramolopium vagans plainly belongs to *T.* sect. *Alpinum*. It is closest to *T. bicolor* Koster (known only from a single collection), which has markedly smaller leaves and larger ligules. The relationship of *T. vagans* with *T. klossii* is not as close; *T. klossii* has wider leaves, larger heads on longer peduncles and disc florets distinctly flared in the upper half.

Etymology: The epithet, from Latin *vago* to wander about, refers to the puzzling disjunction of the species from others of the genus.

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